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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,163	03/23/2004	Masahiko Kimbara	119172	2185
25944	7590	06/14/2007		
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			EXAMINER AFZALI, SARANG	
			ART UNIT 3726	PAPER NUMBER
			MAIL DATE 06/14/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/806,163	KIMBARA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sarang Afzali	3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 16 March 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 6-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20040902 &amp; 20061107</u> .                                 | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. The product by process claim 6 was erroneously included in the Group I (drawn to method of manufacturing a gas storage tank) as outlined in the election/restriction mailed on 2/27/2007.

Note that, "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

2. Claims 6-14 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim.

3. Applicant's election with traverse of claims 1-6 and 15 in the reply filed on 3/16/2007 is acknowledged. The traversal is on the ground(s) that the subject matter of claims is sufficiently related that a through search for the subject matter of any one Group of claims would encompass a search for the subject matter of the remaining claims and that the search and examination of the entire application could be made without serious burden. This is not found persuasive because the two sets of inventions are indeed distinct as the product can be made by a materially different process and

therefore, they are put into different classifications and require different fields of searches and would be serious burden on the examiner.

The requirement is still deemed proper and is therefore made FINAL.

### ***Specification***

4. The disclosure is objected to because of the following informalities: Specification, page 17, paragraph [0051], line 11, should read - - unit 30 at step S130 - - .

Appropriate correction is required.

5. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: A METHOD OF MANUFACTURING A GAS STORAGE TANK.

### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-5 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, line 3, the phrase "hollow filling unit" is not clear as to what exactly is being referred to since this particular feature is not labeled with any reference numerals in the specification or drawings. Is "filling unit" referring to the "heat exchanger unit (30,

130)" or the "heat exchanger casing (34, 134)" or the "hydrogen filling space (33)" or the "joint assemblies (23, 24)" or several of these features?

Claim 1, the phrase "detachable cover member" is not clear as to which feature is exactly being referred to. Is it referring to reference numeral (38, 39) or (61) or another feature which is not labeled?

Claim 1, line 11, the phrase "narrowing the opening" is not clear as to how this narrowing is performed. Would the placement of the said filling unit in the outer wall member causes this narrowing or there is swaging or crimping or another manufacturing step that causes this narrowing?

Claim 1, line 13, the phrase "heat-treating said outer wall member with narrowed opening under water cooling" is unclear as to how a step of heat-treating is applied to the member while the member is under a cooling water. It is not clear whether the heat-treating step is actually done by a cooling water or if the heat-treating step and cooling by water step are both done simultaneously or if the heat-treating step is performed first and followed by a subsequent step of water cooling of the member.

Claim 1, line 15, the phrase "detaching the cover member from said filling unit" is not clear as to whether the step of "detaching" also includes a removal step or just detached and left in place.

Claim 1, lines 16 & 17, the phrase "connecting inside of said filling unit with outside of said outer wall member" is not clear as to how this connection is being done via the narrowed opening of the outer wall member. Is there another connecting piece that connects these two members together?

Claim 3, lines 1-3, the phrase "filling unit includes a fin structure interiorly, wherein the fin structure comes into contact with the absorbent/adsorbent" is not clear as to how exactly this fin structure is constructed and whether this structure is always in contact with the absorbent/adsorbent or it only comes into contact with the absorbent/adsorbent at a certain time and location.

Claim 15, line 3, the phrase "filling unit in a tank" is not clear as to exactly what the filling unit refers to since this particular feature is not labeled with any reference numerals in the specification or drawings. Is "filling unit" referring to the "heat exchanger unit (30, 130)" or the "heat exchanger casing (34, 134)" or the "hydrogen filling space (33)" or the "joint assemblies (23, 24)" or several of these features?

As for the tank, the preamble recites "a gas storage tank" in line 1 and the body of claim recites "a tank" in line 3, which is not clear if this refers back to the same gas storage tank or to a different tank. Is this tank similar to the "metal outer wall member" as recited in claim 1 or it is something different such as tank container (20)?

Claim 15, lines 4 & 5, the phrase "connect a whole gap" is not clear as to what exactly is being referred to. Is there a non-whole or partial gap between the members?

Claim 15, line 6, the phrase "heat-treating said tank under water cooling" is unclear as to how a step of heat-treating is applied to the tank while the tank is under a cooling water. It is not clear as whether the heat-treating step is actually done by a cooling water or if the heat-treating step and cooling by water step are both done simultaneously or if the heat-treating step is performed first and followed by a subsequent step of water cooling of the tank.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3 and 5, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Cook (US 3,006,153).

As applied to claim 1, Cook teaches a method of making a gas storage tank comprised of:

providing a hollow filling unit (vessel 10, Fig. 1) and a metal outer wall member (casing 12, Fig. 1) that is configured to receive said filling unit therein;

filling said filling unit with a gas absorbent/adsorbent for absorbing and/or adsorbing the gas (col. 8, lines 15-16);

attaching a detachable cover member (cover 17 including bursting disc 20, Fig. 1) to said filling unit to block up an opening of said filling unit filled with the absorbent/adsorbent, and placing said filling unit filled with the absorbent/adsorbent in said outer wall member through an opening formed in said outer wall member (top opening prior to cover 28 is installed, Fig. 1);

narrowing the opening of said outer wall member after the placement of said filling unit in said outer wall member (cover 28 has an inner flange which narrows the top opening in the casing 12 once it is installed, Fig. 1);

heat-treating said outer wall member with the narrowed opening under water cooling (heat provided through conduit 16 under the water cooling condition provide by dry ice, col. 8, lines 50-52); and

detaching the cover member from said filling unit (by bursting disc 20) housed in said outer wall member after the heat treatment and connecting inside of said filling unit with outside of said outer wall member via the narrowed opening of said outer wall member (and including the passage 30, Fig. 1), so as to allow for storage and release of the gas into and from the absorbent/adsorbent.

The Examiner submits that there is no patentable difference between the heat-treating with or without a water cooling step or heat-treating step before, during or after a water cooling step and as such, it seems that the invention would work equally well with any one of the abovementioned steps. This specifically claimed manner in which the heat-treating is performed is thus considered to have been obvious matter of choice to one of ordinary skill in the art.

As applied to claim 2, Cook teaches that gas storage tank stores hydrogen and the absorbent/adsorbent includes at least a hydrogen storage alloy. Furthermore, note that Cook teaches that outer metal member (tank 150 in a second embodiment, FIG. 2) includes aluminum pipes or tubes (col. 9, lines 25 & 26).

As applied to claim 3, Cook teaches that the filling unit (10, Fig. 1 is considered a fin structure interiorly and it is in contact with the absorbent/adsorbent.



As applied to claim 5, Cook teaches in a second embodiment that coolant flows through a coolant channel (153, Fig. 2) wherein the coolant channel is connected to the filling unit (110, Fig. 1) and the outside of the outer wall member (150, Fig. 2).

10. Claim 4, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Cook in view of (EP 1 286 406 A2).

Cook teaches the invention cited with the exception of explicitly teaching the fin structure formed by laminating multiple thin plate members having through holes and absorbent/adsorbent filled into gaps formed between the multiple thin plate members.

However, (EP 1 286 406 A2) teaches providing a filling unit including a fin structure formed by laminating multiple thin plate members (wafer baffles 30, 30t, Fig. 1) having through holes (36, Fig. 1) wherein the absorbent/adsorbent is filled into gaps formed between the multiple thin plate members of the filling unit (each cavity within a baffle 30 which also holds absorbent/adsorbent is considered a gap, Fig. 1) and mutually connected via the through holes in order to provide a storage canister capable of enhancing thermal conductivity (paragraph [0012], lines 3 & 4) with increased efficiency (paragraph [0013], lines 1 & 2).

It would have been obvious to one of ordinary skill in the art at the time of invention to have provided Cook with a filling unit including fin structure, as taught by (EP 1 286 406 A2), in order to provide an effective means of making a storage tank used for safe storage and transport with increased efficiency (Cook, col. 1, lines 70-73, col. 2, lines 1-4).

11. Claim 15, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over (EP 1 286 406 A2).

(EP 1 286 406 A2) teaches providing a filling unit (top wafer baffle 30t, Fig. 1) in a tank (20, Fig. 1) with at least one opening (24, Fig. 1); arranging a support member (50, Fig. 1) between the filling unit and the tank; and heat-treating (by heat rolling, claim 10) the tank after the placement of the filling unit and support member.

The Examiner submits that there is no patentable difference between the heat-treating with or without a water cooling step or heat-treating step before, during or after a water cooling step and as such, it seems that the invention would work equally well with any one of the abovementioned steps. This specifically claimed manner in which the heat-treating is performed is thus considered to have been obvious matter of choice to one of ordinary skill in the art.

12. Claim 15, as best understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Hirashima et al. (JP 62258996 A) in view of Toyooka et al. (US 6,755,919).

Hirashima et al. teach a method of making a gas storage tank by placing a filling unit (10, Figs. 2 & 3) in a tank (Container 7, Figs. 2 & 3), having at least one opening (on the left side, Fig. 3) and arranging a support member (members 12, Figs. 2 & 3) between said filling unit and said tank to connect a whole gap formed between said tank and said filling unit with the opening.

Hirashima et al. teach the invention cited with the exception of explicitly teaching the step of heat-treating under water cooling.

However, it is well known in the art to subject a tubular member to a step of heat treating followed by water cooling in order for the member to reach desired strength as taught by Toyooka et al. (col. 8, lines 6-13).

It would have been obvious to one of ordinary skill in the art at the time of invention to have provided Hirashima et al. with a step of heat treating/water cooling, as taught by Toyooka et al., as an effective means of providing desired strength to the container body.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sarang Afzali whose telephone number is 571-272-8412. The examiner can normally be reached on 7:00-3:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bryant can be reached on 571-272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SA  
6/1/2007



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6/6/07